

AATATTTTCCTTGACCTAATGCCATCTTGTGTCCCTTGACAGAGCCCTATTCCCTAACATGGCTGATGACTA
 TGGCTCTGAATCCACATCTTCCATGGAAGACTACGTTAACCTCAACTTCACTGACTTCTACTGTGAGAAAA
 ACAATGTCAGGCAGTTTGGGAGCCATTTCCCTCCACCCTTGTACTGGCTCGTGTTCATCGTGGGTGCCCTG
 GGCAACAGTCTTGTATCCTTGTCTACTGGTACTGCACAAGAGTGAAGACCATGACCGACATGTTCCCTTTT
 GAATTTGGCAATTGCTGACCTCCTCTTTCTTGTCACTCTTCCCTTCTGGGCCATTGCTGCTGCTGACCACT
 GGAAGTTCAGACCTTCATGTGCAAGGTGGTCAACAGCATGTACAAGATGAACCTCTACAGCTGTGTGTG
 CTGATCATGTGCATCAGCGTGGACAGGTACATTGCCATTGCCAGGCCATGAGAGCACATACTTGGAGGGA
 GAAAAGGCTTTTGTACAGCAAAATGGTTTGTCTTACCATCTGGGTATTGGCAGCTGCTCTCTGCATCCCAG
 AAATCTTATACAGCCAAATCAAGGAGGAATCCGGCATTGCTATCTGCACCATGGTTTACCCTAGCGATGAG
 AGCACCAAACTGAAGTCAGCTGTCTTGACCTGAAGGTCACTTCTGGGGTCTTCCCTTCCCTTCGTGGTCAT
 GGCTTGCTGCTATACCATCATCATTACACCCCTGATACAAGCCAAGAAGTCTTCCAAGCACAAAGCCCTAA
 AAGTGACCATCACTGTCTGACCGTCTTTGTCTTGTCTCAGTTTCCCTACAACCTGCATTTTGTGGTGCAG
 ACCATTGACGCTATGCCATGTTTCATCTCCAACCTGTGCCGTTTCCACCACATTGACATCTGCTTCCAGGT
 CACCCAGACCATCGCCTTCTTCCACAGTTGCCTGAACCTGTTCTCTATGTTTTTGTGGGTGAGAGATTCC
 GCCGGGATCTCGTGAACCCCTGAAGAACTTGGGTTGCATCAGCCAGGCCAGTGGGTTTCATTTACAAGG
 AGAGAGGGAAGCTTGAAGCTGTCTCTATGTTGCTGGAGACAACCTCAGGAGCACTCTCCCTCTGAGGGT
 CTCTCTGAGGTGCATGGTTCTTTTGGAGAAATGAGAAATACATGAAACAGTTTCCCCACTGATGGGACC
 AGAGAGAGTGAAAGAGAAAAGAACTCAGAAAGGGATGAATCTGAACTATATGATTACTTGTAGTCAGAA
 TTTGCCAAAGCAAATATTTCAAATCAACTGACTAGTGCAGGAGGCTTGTGATTGGCTCTTGACTGTGATG
 CCCGCAATTCTCAAAGGAGGACTAAGGACCGGCACTGTGGAGCACCCCTGGCTTTGCCACTCGCCGGAGCAT
 CAATGCCGCTGCCTCTGGAGGAGCCCTTGGATTCTTCCATGCACGTGAACTTCTGTGGCTTCAGTTCTC
 ATGCTGCCCTCTTCCAAAGGGGACACAGAAGCACTGGCTGCTGCTACAGACCGCAAAGCAGAAAGTTTCG
 TGAAAATGTCCATCTTTGGGAAATTTCTACCCTGCTCTTGAGCCTGATAACCCATGCCAGGTCTTATAGA
 TTCCTGATCTAGAACCTTTCCAGGCAATCTCAGACCTAATTTCCCTTCTGTCTCCTTGTCTGTTCTGGGC
 CAGTGAAGGTCTTGTCTGATTTTGAACGATCTGCAGGTCTTGCCAGTGAACCCCTGGACAACCTGACCA
 CACCCACAAGGCATCCAAAGTCTGTTGGCTTCCAATCCATTTCTGTGCTCTGCTGGAGGTTTTAACCTAGA
 CAAGGATTCGCTTATTCCTTGGTATGGTGACAGTGTCTCTCCATGGCCTGAGCAGGGAGATTATAACAGC
 TGGGTTTCGAGGAGCCAGCCTTGGCCCTGTTGTAGGCTTGTCTGTTGAGTGGCACTTGTCTTGGGTCCAC
 CGTCTGTCTGCTCCCTAGAAAATGGGCTGGTCTTTTGGCCCTCTTCTTCTGAGGCCCACTTTATCTGA
 GGAATACAGTGAGCAGATATGGGCAGCAGCCAGGTAGGGCAAAGGGGTGAAGCGCAGGCCCTGCTGGAAGG
 CTATTTACTTCCATGCTTCTCCTTTTCTTACTCTATAGTGGCAACATTTTAAAAGCTTTTAACTTAGAGAT
 TAGGCTGAAAAAATAAGTAATGGAATTCACCTTTGCATCTTTTGTGTCTTTCTTATCATGATTGGCAAA
 ATGCATCACCTTTGAAAATATTTACATATTTGAAAAGTGCTTTTTAATGTGTATATGAAGCATTAATTAC
 TTGTCACTTTCTTTACCCTGTCTCAATATTTAAGTGTGTGCAATTAAAGATCAAATAGATACATTAAGAG
 TGTGAAGGCTGGTCTGAAGGTAGTGAGCTATCTCAATCGGATTGTTCACTCAGTTACAGATTGAACCTCC
 TTGTTCTACTTCCCTGCTTCTCTCTACTGCAATTGACTAGTCTTTAAAAAAGTGTGAAGAGTAAGCAAT
 AGGGATAAGGAAATAAGATCT (SEQ ID NO:1)

MADDYGSESTSSMEDYVNFNFTDFYCEKNNVRQFASHFLPPLYWVFIVGALGNSLVILVYWCYTRVKMTD
 MFLNLAIADLLFLVTLFPFWAIAADQWKFTFMCKVVNSMYKMFYSCVLLIMCISVDRYIAIAQAMRAH
 TWREKRLLYSKMVCFTIWVLAALCIPEILYSQIKEESGIAICTMVYPSDESTKLKSAVLTLKVILGFFLP
 FVVMACCYTIIHTLIQAKKSSKHKALKVTITVLTVFVLSQFPYNCILLVQTI DAYAMFISNCAVSTNIDI
 CFQVTQTIAFFHSCLPVLYVVFGERFRRLVKTLKNLGCISQAQWVSFTRREGSLKLSSMLLETTSGALS
 L (SEQ ID NO:2)

FIGURE 1

Underlined = deleted in targeting construct

Bold = sequence flanking Neo insert in targeting construct

AATATTTTCCTTGACCTAATGCCATCTTGTGTCCCCTTGACAGAGCCCTATTCCCTAACATG
GCTGATGACTATGGCTCTGAATCCACATCTTCCATGGAAGACTACGTTAACTTCAACTTC
ACTGACTTCTACTGTGAGAAAAACAATGTGAGGCAGTTTGCGAGCCATTTCCTCCCACCC
TTGTACTGGCTCGTGTTTCATCGTGGGTGCCTTGGGCAACAGTCTTGTAT CCTTGTCTAC
TGGTACTGCACAAGAGTGAAGACCATGACCGACATGTTCCCTTTGAATTTGGCAATTGCT
GACCTCCTCTTTCTTGTCACTCTTCCCTTCTGGGCCATTGCTGCTGCTGACCAAGTGAAG
TTCCAGACCTTCATGTGCAAGGTGGTCAACAGCA **TGTACAAGATGAACTTCTACAGCTGT**
GTGTTGCTGATCATGTGCATCAGCGTGGACAGGTACATTGCCATTGCCAGGCCATGAGA
GCACATACTTGGAGGGAGAAAAAGGCTTTTGTACAGCAAAATGGTTTGTCTTACCATCTGG
GTATTGGCAGCTGCTCTCTGCATCCCAGAAATCTTATACAGCCAAATCAAGGAGGAATCC
GGCATTGCTATCTGCACCATGGTTTACCCTAGCGATGAGAGCACCAAACTGAAGTCAGCT
GTCTTGACCTGAAGGTCATTCTGGGGTCTTCCCTTCCCTTCGTGGTCATGGCTTGCTGC
TATACCATCATCATTCACACCTGATACAAGCCAAGAGTCTTCCAAGCACAAAGCCCTA
AAAGTGACCATCACTGTCTGACCGTCTTTGTCTTGTCTCAGTTTCCCTACAACCTGCATT
T TGTGGTGCAGACCATTGACGCTATGCCATGTTTCATCTCCAACCTGTGCCGTTTCCACC
AACATTGACATCTGCTTCCAGGTACCCAGACCATCGCCTTCTTCCACAGTTGCCCTGAAC
CCTGTTCTCTATGTTTTTGTGGGTGAGAGATTCCGCCGGGATCTCGTGAACCCCTGAAG
AAGCTGGGTGTCATCAGCCAGGCCAGTGGGTTCATTACAAGGAGAGAGGGAAGCTTG
AAGCTGTGCTCTATGTTGCTGGAGACAACCTCAGGAGCACTCTCCCTCTGAGGGGTCTTC
TCTGAGGTGCATGGTTCTTTTGAAGAAATGAGAAATACATGAAACAGTTTCCCCACTGA
TGGGACCAGAGAGAGTGAAGAGAGAAAAAGAACTCAGAAAGGGATGAATCTGAACATATAT
GATTACTTGTAGTCAGAATTTGCCAAAGCAAATATTTCAAAATCAACTGACTAGTGCAGG
AGGCTGTTGATTGGCTCTTGAATGTGATGCCCCGAATCTCAAAGGAGGACTAAGGACCG
GCACTGTGGAGCACCTGGCTTTGCCACTCGCCGGAGCATCAATGCCGCTGCCTCTGGAG
GAGCCCTTGGATTTCTCCATGCACTGTGAATTTCTGTGGCTTCAGTTCTCATGCTGCCCT
CTTCCAAAAGGGGACACAGAAGCACTGGCTGCTGCTACAGACCGCAAAAGCAGAAAGTTT
CGTGAAGATGTCCATCTTTGGGAAATTTTCTACCCTGCTCTTGAGCCTGATAACCCATGC
CAGGTCTTATAGATTCTTGATCTAGAACCTTTCCAGGCAATCTCAGACCTAATTTCCCTTC
TGTTCTCCTTGTTCTGTTCTGGGCCAGTGAAGGTCTTGTCTGATTTTGAACGATCTG
CAGGTCTTGCCAGTGAACCCCTGGACAACCTGACCACACCCACAAGGCATCCAAAGTCTGT
TGGCTTCCAATCCATTTCTGTGCTCTGCTGGAGGTTTAACTAGACAAGGATTCGCTT
ATTCTTGGTATGGTGACAGTGTCTCTCCATGGCTGAGCAGGGAGATTATAACAGCTGG
GTTTCGAGGAGCCAGCCTTGGCCCTGTTGTAGGCTTGTCTGTTGAGTGGCACTTGCTTT
GGGTCCACCGTCTGTCTGCTCCCTAGAAAATGGGCTGGTTCTTTTGGCCCTCTTCTTTCT
GAGGCCCACTTTATCTGAGGAATACAGTGAGCAGATATGGGCAGCAGCCAGGTAGGGCA
AAGGGGTGAAGCGCAGGCCTTGTGGAAGGCTATTTACTTCCATGCTTCTCTTTTCTTA
CTCTATAGTGGCAACATTTTAAAAGCTTTTAACTTAGAGATTAGGCTGAAAAAATAAGT
AATGGAATTCACCTTTGCATCTTTTGTGTCTTTCTTATCATGATTTGGCAAAATGCATCA
CCTTTGAAAATATTTACATATTGGAAGAGTGTCTTTAATGTGTATATGAAGCATTAAT
TACTTGTCACTTTCTTTACCCTGTCTCAATATTTAAGTGTGTGCAATTAAGATCAAAAT
AGATACATTAAGAGTGTGAAGGCTGGTCTGAAGGTAGTGAGCTATCTCAATCGGATTGTT
CACACTCAGTTACAGATTGAACCTTGTCTTACTTCCCTGCTTCTCTCTACTGCAATTG
ACTAGTCTTTAAAAAAGTGTGAAGAGTAAGCAATAGGGATAAGGAAATAAGATCT

FIGURE 2A

Gene Sequence
Structure *

231 bp

Sequence Deleted

394 bp

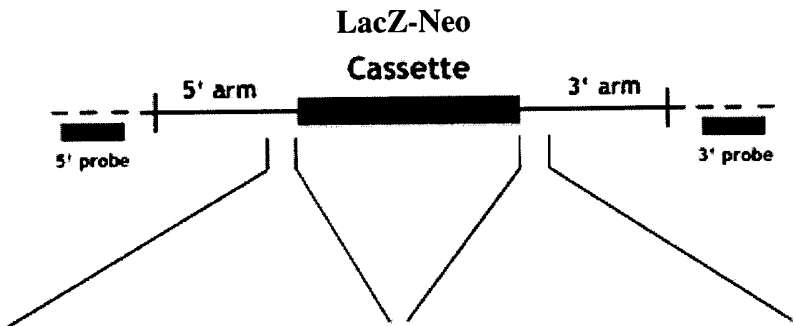
Size of CDS: 2577 bp



Targeting Vector* (genomic sequence)

Construct Number: 3340

Arm Length:
5': 2.7 kb
3': 4 kb



5' >TATTCCTTACAGAGCCTTATT
CCTGGCATGTTTGATGACTTCAGC
TATGACTCCACTGCTTCCACAGAT
GACTACATGAATTTGAATTTTCAGT
AGCTTCTTCTGTAAGAAAAATAAT
GTCAGGCAGTTTGCAAGCCATTTT
CTCCACCTCTGTACTGGCTTGTG
TTCATTGTGGGCACCTTGGGCAAC
AGCCTGGTCAT<3'
(SEQ. ID. NO. 3)

5' >TGTACAAGATGAACTTCTACA
GCTGTGTGCTTCTCATCATGTGCA
TCAGTGTGGACAGATACATTGCCA
TTGTACAGGCCATGAAGGCTCAGG
TCTGGAGGCAGAAAAGGCCGCTAT
ACAGCAAGATGGTCTGCATTACCA
TCTGGGTGATGGCAGCTGTGCTCT
GCACCCAGAAAATCCTGTACAGTC
AAGTCAGTGGG<3'
(SEQ. ID. NO. 4)

————— Targeting Vector
----- Endogenous Locus

* Not drawn to scale

FIGURE 2B